

EXHIBIT D

BF16 multiply.

FP32 outputs.

Progress (of 64) 0----- 1----- 2----- 3----- 4----- 5----- 6---

Done.

Total number of inputs checked= 4294967296(100000000)

Valid inputs don't produce NaN, Overflow (Inf), or Underflow (i.e. 0 when exact is not 0).

Number of Valid Inputs to Multiply 3369741239(c8da2bb7)

error range [50.00%,100.00%), valid inputs in range 0.08% (2750546), in or above range= 0.08%

error range [20.00%, 50.00%), valid inputs in range 0.16% (5461018), in or above range= 0.24%

error range [10.00%, 20.00%), valid inputs in range 0.19% (6406715), in or above range= 0.43%

error range [5.00%, 10.00%), valid inputs in range 0.22% (7247952), in or above range= 0.65%

error range [2.00%, 5.00%), valid inputs in range 0.37% (12350786), in or above range= 1.02%

error range [1.00%, 2.00%), valid inputs in range 3.63% (122356186), in or above range= 4.65%

error range [0.50%, 1.00%), valid inputs in range 50.75% (1710072241), in or above range=55.39%

error range [0.20%, 0.50%), valid inputs in range 37.29% (1256688117), in or above range=92.69%

error range [0.10%, 0.20%), valid inputs in range 5.46% (184012895), in or above range=98.15%

error range [0.05%, 0.10%), valid inputs in range 1.37% (46304288), in or above range=99.52%

error range [0.02%, 0.05%), valid inputs in range 0.39% (13261963), in or above range=99.92%

error range [0.01%, 0.02%), valid inputs in range 0.06% (1993827), in or above range=99.98%

error range [0.00%, 0.01%), valid inputs in range 0.02% (834705), in or above range=100.00%

Of all possible inputs (more than valid inputs)

NaN 0.78% (33488896 counts)

Inf 12.52% (537754624 counts)

Und 8.24% (353982537 counts)

Summary for spreadsheet. Inputs bf16. Output fp32.

4.65%

55.39%

92.69%

98.15%

99.52%

0.78%

12.52%

8.24%

ignore: nan